

Patent Docket: 7000/1  
Serial No. 09/774,157

### **REMARKS**

This amendment responds to the Office Action dated July 17, 2003. Claims 1-43 were pending. Claims 1-43 were subject to a restriction requirement, of which claims 1-36 were elected. Thus, claims 37-43 have been previously withdrawn.

Claims 1-25 have been amended to better define the invention, and claims 26-36 have been canceled without disclaimer of or prejudice to the subject matter contained therein.

### **DISCLOSURE OBJECTION**

The Examiner objected to the disclosure because there is no reference to FIG 6. The Applicant notes that there is a reference to FIG 6 at page 17, line 16. However, the Applicant has amended the disclosure herein to include another reference to FIG 6 on page 16. Reconsideration and withdrawal of the objection to the disclosure is therefore respectfully requested.

### **DRAWINGS OBJECTION**

The Examiner objected to the drawings under 37 C.F.R. § 1.83(a) as failing to show every feature of the invention specified in the claims. Specifically, the Examiner contends the drawings fail to show the means for adding or removing a gas as found in claims 4-5 and 16-17.

Claims 4-5 and 16-17 have been amended, which included removing the means for adding or removing a gas; hence this objection is moot. Reconsideration and withdrawal of the objection to the drawings is therefore respectfully requested.

### **CLAIMS 1, 4 AND 11 ARE PATENTABLE OVER WENDELIN**

The Examiner rejected claims 1, 4 and 11 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,240,798 to Wendelin [hereinafter "Wendelin"]. Essentially, the Examiner contends that Wendelin discloses all of the elements of the claim at issue. The

Patent Docket: 7000/1

Serial No. 09/774,157

Applicant respectfully disagrees with the Examiner's characterization of this reference vis-à-vis the claims at issue.

As recited in the claims at issue, the kinetics between nitrogen dioxide and nitrogen monoxide in the presence of ozone and oxygen are modified by an equilibrium means (*e.g.*, by light or some other means), the result and change from which is then monitored by a gas sensor for quantifying the concentration of nitrogen monoxide, nitrogen dioxide or ozone. Wendelin fails to disclose modifying the kinetics between nitrogen dioxide and nitrogen monoxide in the presence of ozone and oxygen. As such, Wendelin fails to anticipate claims 1, 4 and 11. Reconsideration and withdrawal of the rejection of claims 1, 4 and 11 is therefore respectfully requested.

#### CLAIMS 1-2 AND 11-12 ARE PATENTABLE OVER GUICHERIT

The Examiner rejected claims 1-2 and 11-12 under 35 U.S.C. §102(b) as being anticipated by either Guichérit, R.Z. Anal. Chem. 1971, 256, 177-182 [hereinafter "Guichérit I"] or Guichérit R. Chemical Abstracts 1973, 78 abstract 7421g [hereinafter "Guichérit II"]. As the Examiner does not make it clear on which reference the rejection is based, the Applicants have responded to both. Essentially, the Examiner contends that Guichérit I or Guichérit II discloses all of the elements of the claims at issue. The Applicant respectfully disagrees with the Examiner's characterization of these references vis-à-vis the claims at issue.

In Guichérit I and II, Guichérit published the use of rhodamine B to measure low concentrations of ozone. The light emissions stability is improved by using gallic acid, and Guichérit I and II describe first using ozonated then a cleansing cycle of ozone-free air to maintain dye stability. This teaches an indirect method of determining nitrogen oxide by a chemi-luminescent method. Unlike in the present invention, the method described in Guichérit I and II does not indicate a means for changing the kinetics between nitrogen monoxide and nitrogen dioxide in the presence of ozone and oxygen with the concentration of a first gas then being read at a plurality of time points during the process of the kinetics

Patent Docket: 10392/46901  
Serial No. 09/537,800

between nitrogen monoxide and nitrogen dioxide being altered, as recited in the claim at issue. As such, Guichert I and II fail to anticipate the claims at issue. Reconsideration and withdrawal of the rejection of claims 1-12 and 11-12 is therefore respectfully requested.

#### **CLAIMS 1-2 AND 11-12 ARE PATENTABLE OVER ORTMAN**

The Examiner rejected claims 1-2 and 11-12 under 35 U.S.C. §102(b) as being anticipated by Ortman, G. Chemical Abstracts 1982, 97 abstract 27858a. [hereinafter "Ortman"]. Essentially, the Examiner contends that Ortman discloses all of the elements of the claims at issue. The Applicant respectfully disagrees with the Examiner's characterization of this reference vis-à-vis the claims at issue.

Ortman published a method of irradiating a sample of polluted air with UV, then measuring the ozone change as a way of measuring the photochemical reactivity potential of the polluted sample. Unlike in the present Application, Ortman does not describe separate components whereby sensors are used to take readings over a plurality of time points during the process of the kinetics between nitrogen monoxide and nitrogen dioxide in the sample being altered, as recited in the claims at issue. As such, Ortman fails to anticipate claims 1-2 and 11-12. Reconsideration and withdrawal of the rejection of claims 1-2 and 11-12 is therefore respectfully requested.

#### **CLAIMS 3-10 AND 13-36 ARE PATENTABLE OVER ORTMAN, BURROWS AND STUHL**

The Examiner rejected claims 3-10 and 13-36 under 35 U.S.C. §103(a) as being unpatentable over Ortman (as applied to claims 1-2 and 11-12) in view of Burrows, J.P. et al., Journal of Photochemistry, 1981, 16, 147-168 [hereinafter "Burrows"] or Stuhl, F. et al., The Journal of Chemical Physics 1971, 55, 3943-3953 [hereinafter "Stuhl"]. Essentially, the Examiner contends that Ortman discloses all of the elements of the claims at issue, except for measurement of the modulated irradiation of the sample, for which the Examiner apparently cites Burrows or Stuhl. Finally, the Examiner contends that it would have been obvious to

Patent Docket: 7000/1  
Serial No. 09/774,157

one of ordinary skill in the art at the time the invention was made to incorporate the flash or modulated photolysis as taught by Stuhl or Burrows into the Ortman device and method because of the ability to measure both concentration and lifetimes as taught by Burrows and the high detection sensitivity and fast time resolution as taught by Stuhl.

The Applicant respectfully submits that the Examiner has failed to make a *prima facie* case for obviousness because the combination of the Ortman, Burrows and Stuhl, even assuming *arguendo* they can be combined, does not disclose or suggest all elements of Applicant's rejected claims.

As discussed above, Ortman fails to disclose using sensors to take readings over a plurality of time points during the process of the kinetics between nitrogen monoxide and nitrogen dioxide in the sample being altered, as recited in the claims at issue. Burrows and Stuhl also fail to disclose this teaching; hence the combination of Ortman, Burrows and Stuhl fails to include this teaching.

Moreover, Burrows and Stuhl both use fast UV light pulsing to measure the kinetics of inter-molecular reactions. This knowledge of how to measure fast reactions is different to using a slow reaction to modify concentrations over several seconds, as opposed to milliseconds. This problem of measurement of these important polluting molecules has remained a problem for many years, as can be seen by the early dates of the Burrows and Stuhl references, and it was in no way obvious to overcome the described problems in the way that it is now being directed in the present Application.

In sum, the Examiner has failed to make a *prima facie* case for obviousness because the combination of the Ortman, Burrows and Stuhl, even assuming *arguendo* they can be combined, does not disclose or suggest all elements of Applicant's rejected claims; hence claims 3-10 and 13-36 are patentable over Ortman, Burrows and Stuhl, either taken alone or in any combination. Reconsideration and withdrawal of the rejection of claims 3-10 and 13-36 is therefore respectfully requested.

Patent Docket: 7000/1  
Serial No. 09/774,157

### CONCLUSION

The Applicants respectfully submit this application is in condition for allowance and request issuance of a Notice of Allowability.

In the event the prosecution of this application can be efficiently advanced by a phone discussion, it is requested that the undersigned attorney be called at (703) 435-9390.

### FEES

If additional amounts are due following the amendments made to the claims above, or for any other reason, it is respectfully requested that the PTO charge any deficiency or credit any overpayment to the deposit account of Mayer Fortkort & Williams PC, Deposit Account, #50-1047.

Respectfully submitted,

By   
Michael P. Fortkort Reg. No. 35,141

Date: October 17, 2003

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